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2024 Coronary Computed Tomography Angiography (CCTA) CDPHP

Diagnostic Imaging

CTA-CCTA-CDPHP

Last Review Date: 10/28/2024
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Guideline Initiated: 06/30/2019

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Coronary Computed Tomography Angiography (CCTA)

NCD 220.1
See also, **NCD 220.1**: Computed Tomography at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

Coronary Computed Tomography Angiography (CCTA) Contraindications

Computed tomography angiography (CTA) may be contraindicated when the individual's body mass index (BMI) is more than 40 (relative contraindication due to suboptimal image quality). [17]

CTA General Contraindications

Computed tomography angiography (CTA) is contraindicated for **ANY** of the following: [1] [5] [22]

- Contrast allergy
- Heart failure is decompensated.
- Hemodynamic instability (eg, abnormal laboratory values, blood pressure instability)
- Renal impairment (glomerular filtration rate is 30 mL/min/1.73m^2)
- Protocol can **NOT** be followed (eg, technical or related to individual).

Preamble: Pediatric Diagnostic Imaging

HealthHelp's clinical guidelines for the Diagnostic Imaging program, are intended to apply to both adults and pediatrics (21 years of age or younger), unless otherwise specified within the criteria.

CCTA Guideline

A coronary computed tomography angiography (CCTA) is considered medically appropriate and the documentation demonstrates **ANY** of the following: [18]

1. Aneurysm or coronary anomaly (eg, arteriovenous malformations [AVM]), for evaluation and **EITHER** of the following: [9] [13]
    a. Clinical status change or there are new or worsening signs (eg, dizziness, pain, shortness of breath).

b. Kawasaki disease **OR** multisystem inflammatory syndrome in children (MIS-C) [20]

2. Coronary artery disease (CAD) is suspected, asymptomatic, and **ANY** of the following: [4] [3] [10]
   a. Electrocardiogram (ECG) shows evidence of myocardial ischemia (MI) with ischemic ST segment or T wave abnormalities.
   b. Left bundle branch block (LBBB)
   c. Q waves are pathologic.
3. Heart failure (systolic or diastolic) is newly diagnosed and cardiac ischemia is suspected when coronary angiography is **NOT** planned. [6] [21]
4. Mitral regurgitation is known, to establish cause. [7]
5. Peri-procedural for **ANY** of the following: [8] [13]
   a. Pre-procedure for **ANY** of the following:
      i. Aneurysm repair planning
      ii. Electrophysiologic procedure planning for evaluation of anatomy prior to radiofrequency ablation
      iii. Prior to cardiac or other chest surgery to determine location of CABG
      iv. Valve surgery or transcatheter intervention, as an alternative to coronary angiography
   b. Post-procedure and **ANY** of the following:
      i. Percutaneous coronary intervention (eg, stents more than 3 mm) **OR** coronary artery bypass graft (CABG) history, **AND** individual is symptomatic (eg, chest pain, shortness of breath). [19]
      ii. Post-operative to evaluate CABG patency when invasive coronary arteriography is **NOT** completed, non-diagnostic or indeterminate. [16]
6. Stress imaging and **ANY** of the following:
   a. Exercise ECG stress test with intermediate Duke Treadmill Score (-10 to +4) [14]
   b. Pretest probability is intermediate or high. [12] [11]
   c. Stress imaging is equivocal, borderline or discordant with continued CAD symptoms (eg, chest pain, shortness of breath, weakness).
   d. Stress imaging (prior) is normal and symptoms are new or worsening.
7. Symptoms include chest pain or shortness of breath and **ALL** of the following:

A. **NO** significant arrhythmia or tachycardia (heart rate [HR] more than 100 BPM)

B. **ANY TWO** or more of the following:

1. Age is over 50 years old.
2. Diabetes mellitus (DM)
3. Family history of coronary artery disease
4. Functional test (eg, ECG, ECHO) was indeterminate or demonstrates significant changes
5. Hypertension
6. Hypercholesterolemia
7. Tobacco use history

L33947
See also, **LCD33947**: Cardiac Computed Tomography (CCT) and Coronary Computed Tomography Angiography (CCTA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

L33559
See also, **LCD33559**: Cardiac Computed Tomography (CCT) and Coronary Computed Tomography Angiography (CCTA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*. (*__NOTE__: *As of 02/28/2025 there is not criteria in LCD 33947 for CT Heart. The criteria is for CCTA only*.)

LCD 33423
See also, **LCD 33423**: Cardiac Computed Tomography & Angiography (CCTA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

LCD 35121
See also, **35121**: Coronary Computed Tomography Angiography (CCTA) at https://www.cms.gov/medicare-coverage-database/search.aspx *if applicable to individual's healthplan membership*.

CCTA Procedure Code

Table 1. CCTA associated Procedure Codes

Codes	Description
75574	Computed tomographic angiography, heart, coronary arteries and bypass grafts (when present), with contrast material, including 3D image postprocessing (including evaluation of cardiac structure and morphology, assessment of cardiac function, and evaluation of venous structures, if performed)

CCTA Summary of Changes

CCTA guideline had the following version changes from 2023 to 2024:

- Added the following to keep in line with current research:
  - CCTA Contraindications section
  - "Electrophysiologic procedure planning" under "Peri-procedural"
  - Indications under "Aneurysm"
  - "Mitral valve regurgitation" indication
  - "Percutaneous coronary intervention" under "Peri-procedural"
- Mid-cycle update: 9/25/2024
  - Changed from "Male over 40 years" to "Age is over 40 years" under "Symptoms include Chest pain"

CCTA Definitions

Cardiac ablation is a procedure performed in a cardiac catheterization laboratory during an electrophysiology study (EPS) for the purpose of destroying myocardial tissue by delivery of radio-frequency energy, electrical or cryo-energy. The procedure is used to correct heart arrhythmias.
Aneurysm refers to weakness in an artery wall, allowing it to abnormally balloon out or widen.
Anomaly is something different, abnormal, peculiar or not easily classified.
Arrhythmia is an irregular or abnormal heart rhythm. Arrhythmia refers to any change from the normal sequence of electrical impulses of the heart, causing abnormal heart rhythms. The

electrical impulses may happen too fast, too slowly or erratically – causing the heart to beat too fast, too slowly or erratically.

Arteriovenous malformations (AVM) are congenital high-flow vascular malformations characterized by abnormal shunting of blood from high-flow feeding arteries to low-resistance veins via a cluster of aberrant blood vessels termed a central nidus, bypassing the normal capillary bed.

Computed tomography (CT) is an imaging test that uses X-rays to computer analysis to generate cross sectional images of the internal structures of the body that can be displayed in multiple planes.

Computed tomography angiography (CTA) is a medical test that combines a computed tomography (CT) scan with an injection of a special dye to produce pictures of blood vessels and tissues in a part of the body.

Coronary angiogram, also known as angiography, is a procedure to evaluate the heart's blood vessels. It's a type of cardiac catheterization, a group of procedures that use narrow tubes called catheters inserted into blood vessels to diagnose or treat heart conditions.

Coronary artery bypass graft (CABG) is a surgical procedure performed to shunt blood around a narrowing or blockage in the coronary artery of the heart. This procedure involves attaching one end of a segment of blood vessel (eg, a vein of the leg) that was removed from another part of the body into the aorta, and the other end of the segment into the coronary artery beyond the obstructed area, to increase blood flow.

Coronary artery disease (CAD) is caused by plaque buildup in the walls of the arteries that supply blood to the heart (called coronary arteries) and other parts of the body.

Diabetes mellitus is a metabolic disease that occurs when the body can't produce enough insulin or can't use it properly. DM can also be caused by defects in insulin secretion or action.

Diastolic heart failure , also known as heart failure with preserved ejection fraction (HFpEF), is characterized by the heart's inability to fill properly due to impaired relaxation and increased stiffness of the ventricular walls, while maintaining normal systolic function.

The Duke treadmill score (DTS) is a weighted index combining treadmill exercise time using standard Bruce protocol, maximum net ST segment deviation (depression or elevation), and exercise-induced angina. It was developed to provide prognostic information for the evaluation of suspected coronary heart disease.

- Duke Treadmill scores (typically range from -25 to +15) and associate risk:
  - Low risk is a score of +5 or more.
  - Moderate risk is a score of -10 to +4
  - High risk is a score of -11 or less

Echocardiography is a diagnostic test which uses ultrasound waves to make images of the heart chambers, valves and surrounding structures. It can measure cardiac output and is a sensitive test for fluid around the heart (pericardial effusion). It can also be used to detect abnormal anatomy or infections of the heart valves.

Electrocardiogram (ECG or EKG) is a test that measures and records the electrical activity of the heart. The ECG electrical activity is divided into the P wave, PR interval, QRS complex, QT interval, ST segment, T wave and U wave. An ECG is useful in establishing many cardiac diagnoses.

Electrophysiologic study (EPS) is an invasive procedure used to diagnose and treat arrhythmias by placing catheters in the heart to record intracardiac electrograms and perform pacing, with risks including cardiac tamponade and life-threatening ventricular arrhythmias.

Indeterminate findings are inconclusive or insufficient for treatment planning.

Ischemia is a deficient supply of blood to a body part (such as the heart or brain) due to obstruction of the inflow of arterial blood.

Kawasaki disease is an acute, self-limited vasculitis that predominantly affects children under 5 years old and can lead to coronary artery aneurysms if untreated. It is characterized by prolonged fever, rash, conjunctivitis, lymphadenopathy, mucocutaneous changes, and extremity changes such as erythema and edema.

Left bundle branch block (LBBB) is a delay or obstruction along the electrical pathway to the heart's left ventricle, which can be caused by underlying heart problems. There are often no symptoms involved, however, symptomatic persons can experience syncope or pre-syncope, fatigue and shortness of breath.

Mitral valve regurgitation is a condition where blood leaks from the mitral valve back into the heart. The mitral valve separates the two chambers of the heart's left side. When the valve doesn't close completely, blood flows backward into the upper heart chamber from the lower chamber.

Multisystem inflammatory syndrome in children (MIS-C) causes different body parts to become inflamed, including the heart, lungs, kidneys, brain, skin, eyes or gastrointestinal tract. MIS-C can be serious, even deadly, but most children who are diagnosed with this condition get better with medical care.

Myocardial ischemia occurs when blood flow to the heart is reduced, preventing the heart muscle from receiving enough oxygen. The reduced blood flow is usually the result of a partial or complete blockage of the heart's arteries (coronary arteries).

Non-diagnostic is a result that does not lead to a confirmed diagnosis.

Pediatric approximate ages are defined by the US Department of Health (USDH), the Food and Drug Administration (FDA), and the American Academy of Pediatrics (AAP) as the following:

- Infancy, between birth and 2 years of age
- Childhood, from 2 to 12 years of age

- Adolescence, from 12 to 21 years of age, further defined by the AAP into:
    1. Early (ages 11–14 years)
    2. Middle (ages 15–17 years),
    3. Late (ages 18–21 years)
    4. Older ages may be appropriate for children with special healthcare needs.

Percutaneous coronary intervention (PCI) is a non-surgical procedure that uses a catheter (a thin flexible tube) to place a small structure called a stent to open up blood vessels in the heart that have been narrowed by plaque buildup, a condition known as atherosclerosis.
Peri-procedural is the period before, during and after a procedure. The time frames vary based on surgical urgency and recovery ability the performance of a medical procedure.
Q wave represents initial depolarization of the interventricular septum and is defined as the first negative deflection following the P wave and occurring before the R wave.
Stenosis is a narrowing or constriction of the diameter of a bodily passage or orifice.
Stent is a small, expandable tube that is placed into a hollow structure in the body. Stents are often used to treat narrowed or weak blood vessels, such as arteries, veins or the ureter.
ST segment encompasses the region between the end of ventricular depolarization and beginning of ventricular repolarization on the ECG.
Systolic heart failure is a specific type of heart failure that occurs in the heart's left ventricle.
T wave represents the repolarization of the ventricles. The interval from the beginning of the QRS complex to the apex of the T wave is referred to as the absolute refractory period. The last half of the T wave is referred to as the relative refractory period or vulnerable period.

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Disclaimer section

Purpose

The purpose of the HealthHelp's clinical guidelines is to assist healthcare professionals in selecting the medical service that may be appropriate and supported by evidence to safely improve outcomes. Medical information is constantly evolving, and HealthHelp reserves the right to review and update these clinical guidelines periodically. HealthHelp reserves the right to include in these guidelines the clinical indications as appropriate for the organization's program objectives. Therefore the guidelines are not a list of all the clinical indications for a stated procedure, and associated Procedure Code Tables may not represent all codes available for that state procedure or that are managed by a specific client-organization.

Clinician Review

These clinical guidelines neither preempt clinical judgment of trained professionals nor advise anyone on how to practice medicine. Healthcare professionals using these clinical guidelines are responsible for all clinical decisions based on their assessment. All Clinical Reviewers are instructed to apply clinical indications based on individual patient assessment and documentation, within the scope of their clinical license.

Payment

The use of these clinical guidelines does not provide authorization, certification, explanation of benefits, or guarantee of payment; nor do the guidelines substitute for, or constitute, medical advice. Federal and State law, as well as member benefit contract language (including definitions and specific contract provisions/exclusions) take precedence over clinical guidelines and must be

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National and Local Coverage Determination (NCD and LCD)

NOTICE
To ensure appropriate review occurs to the most current NCD and/or LCD, always defer to https://www.cms.gov/medicare-coverage-database/search.aspx.

Background

National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) are payment policy documents outlined by the Centers for Medicare and Medicaid Services (CMS) and the government's delegated Medicare Audit Contractors (MACs) that operate regionally in jurisdictions.
CMS introduced variation between different jurisdictions/Medicare Audit Contractors (MACs) and their associated covered code lists with the transition to ICD 10. The variation resulted in jurisdictions independently defining how codes are applied for exclusions, limitations, groupings, ranges, etc. for the medical necessity indications outlined in the NCD and LCD. Due to this variation, there is an inconsistent use/application of codes and coverage determinations across the United States between the different MACs.
In addition, **WITHOUT** notice, CMS can change the codes that indicate medical necessity and the format of the coverage determinations/associated documents (eg, Articles). This is an additional challenge for organizations to keep up with ongoing, unplanned changes in covered codes and medical necessity indications.

Medical Necessity Codes

Due to the variation in code application between jurisdictions/MACs and that updates can happen without notification, HealthHelp is not able to guarantee full accuracy of the codes listed for any

Coverage Determination, and advises that prior to use, the associated Coverage Determination Articles are reviewed to ensure applicability to HealthHelp's programs and any associated NCDs and LCDs.

For Internal Use Only:

11248 11249 11253 11282 11325 11328 11333 11349 11350 11351 11352 11354 11355 11356 11358 11359 11360 11361 11362 11365 11366 11367 11368 11369 11370 11374 11375 11394 11395 11396 11565